NATIONAL ADVISORY COMMITTEE FOR AERONAUTICS.

TM 191

"AM" FLEXIBLE METAL JOINT.

Manufactured by E. Martin, Oullins, France.

February, 1923.

"AM" FLEXIBLE METAL JOINT.*

In installing fuel pipes on vehicles in general and on airplanes in particular, two kinds of difficulties are encountered, due, respectively, to vibrations and to the nature of the liquid.

The vibrations preclude the employment of ordinary metal joints, since they loosen and cause leaks. On the other hand, the resulting rigidity of the pipes will cause deterioration of the metal sooner or later, according to the intensity of the vibrations and the size of the joint. Such joints have, moreover, the disadvantage of necessitating soldering or brazing, the quality of which depends on the skill of the workmen, which is not always the same.

In aeronautics, therefore, such connections are generally made by rubber tubing, called "Durit." This method offers the incontestable advantage of great flexibility, but, unfortunately, the combustible liquids (especially gasoline and benzol) have a disastrous chemical action on rubber and its compounds. The remedies tried retard this action but slightly. The products of disintegration, which occur sometimes in the form of particles of some size and sometimes in the form of mud, cause eight-tenths of all fuel troubles. The rubber connections must, therefore, be frequently renewed, in order to maintain a comparative freedom from such troubles. This is a great care, as well as a source of appreciable expense. Such connections are unsightly, troublesome to make, heavy by reason of the clamps required and

* Manufactured by E. Martin, Oullins, France. (A. Moulet, agent, 21 rue La Fontaine, Paris, France.)

of doubtful tightness and strength, in the event of strong accidental pressure.

The "AM" Flexible Joint proposes to remedy all these disadvantages. It comprises:

A sleeve A, inclosing a packing ring B of elastic material (of rectangular cross-section in the free state), inclosed on three sides by a thin malleable metal covering. This ring is followed by a metal ring C, the cross-section of which presents two sides inclined at suitable angles.

A gland D, which can be operated from the outside, screws into the sleeve. The inner end of the gland is beveled to fit the bevel of the metal packing ring. This gland is split in several places perpendicularly to the thread.

Instructions for Assembling.

For joining two pipes end to end, first remove any interior or exterior seams from both pipe ends and smooth with a fine file and emery cloth, so as to facilitate their introduction into the joint and prevent scratches in slipping the joint on the pipes. Turn the two hexagonal flanges by hand, without forcing, in order to keep them stationary during the assembling.

1. Bring into contact the pipe ends to be joined and make reference marks, as shown in the figure.

2. Slip the joint over one of the pipe ends.

3. Bring the pipe ends together and bring the joint between

the reference marks. Hold the sleeve with a wrench and turn both hexagonal flanges to within 1 mm of the sleeve. Make sure that the pipe ends do not recede from each other during the operation.

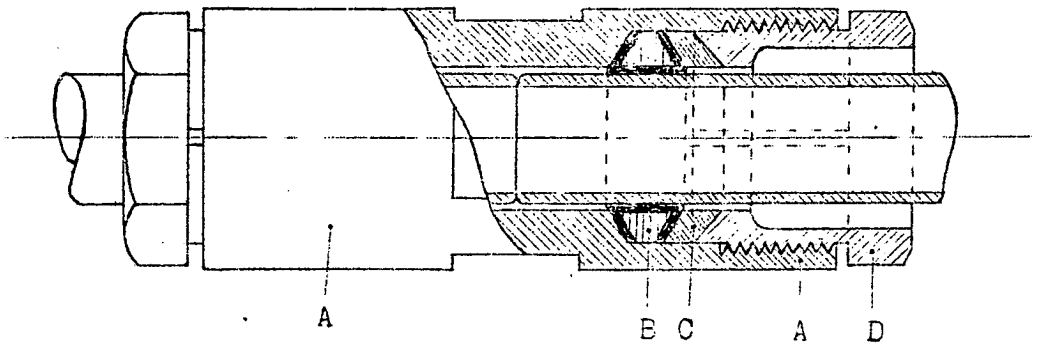
In joining a pipe to a tank, cock, pump, or carburetor, provided with a joint of series R, the same precautions, as above, are to be taken in preparing the end of the pipe, but no reference marks are required, it being sufficient to push the pipe into the joint as far as it will go and to tighten the flange as above.

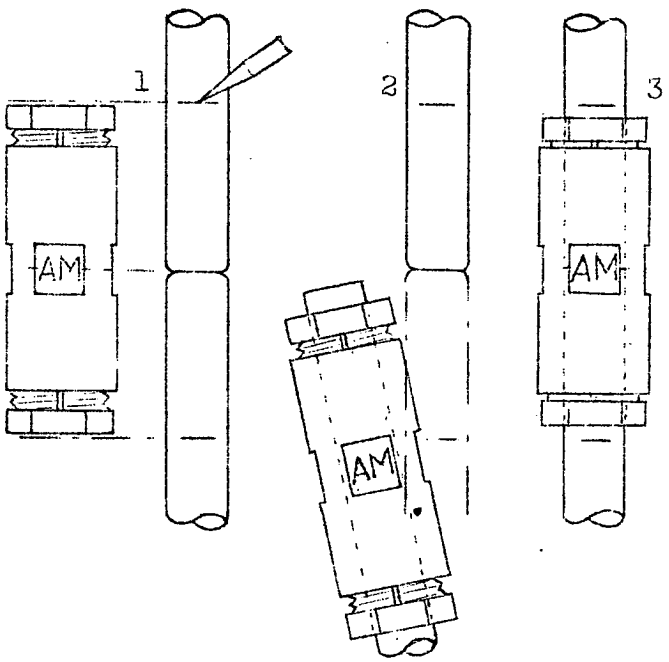
IMPORTANT.

Use only pipes whose outside diameter is exactly that marked on the joint.

If, exceptionally, a joint leaks after being exposed to vibrations, tighten it more strongly, even till the flange comes in contact with the sleeve. If it still leaks, exchange the joint, which was doubtless damaged, in assembling, by a poorly prepared tube or by slipping it on wrong.

Translated by the National Advisory Committee for Aeronautics.





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